

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

THIS PAGE BLANK (USPTO)



REC'D 19 DEC 2000

WIPO PCT

Kongeriget Danmark

10/030957

Patent application No.: PA 2000 00238
Date of filing: 15 February 2000
Applicant: Shapes
Griffenfeldsgade 29
DK-2200 København N

This is to certify the correctness of the following information:

The attached photocopy is a true copy of the following document:

- The specification, claims, abstract and drawings as filed with the application on the filing date indicated above.



Patent- og
Varemærkestyrelsen
Erhvervsministeriet

Taastrup 14 August 2000


Karin Schlichting
Head Clerk

PRIORITY DOCUMENT
SUBMITTED OR TRANSMITTED IN
COMPLIANCE WITH
RULE 17.1(a) OR (b)

15/02/00

15:37

HOLME PATENT A/S

NR. 030

003



HOLME PATENT A/S

Patenter - Varemærker - Mønstre

European Patent Attorneys
European Trade Mark Attorneys
Member of FICPI and EPI
Member of DDPAF

Shapes
Griffenfeldsgade 29
2200 København N

Modtaget

Dces ref.:
Vores ref.: 1.0001.001

15 FEB. 2000

Dato: 15 FEB. 2000

PVS

Protective waistcoat

Beskyttelsesvest

Vesterbrogade 20
DK - 1620 København V
Danmark

Tlf: + 45 33 24 21 21
Fax: + 45 33 24 91 21
Giro: 1 22 29 29

www.HolmePatent.dk
E-mail: holme@HolmePatent.dk
SE No.: 14 24 93 38

The invention relates to a protective waistcoat which comprises a front section on the front side of a person wearing the waistcoat and a back section on the back side of said person, straps for connecting the two sections, and a number of armour
5 cover parts forming the sections.

~~Personnel within e.g. the police and the army and also e.g.~~
body guards and doormen can in certain circumstances find themselves in dangerous situations where they risk being
10 attacked by small arms such as revolvers and small machine guns or by pointed objects such as knives or awls.

When a person in such a situation is wearing a protective waistcoat, the person will to a great extent be secured against
15 being injured or even killed by the attack.

Such waistcoats are normally made of materials which are proof against being penetrated by projectiles fired from small arms. Some waistcoats are also made of materials which are proof
20 against being penetrated by both a projectile and a pointed object such as a knife or an awl.

The material is conventionally formed as plates, which need to be rather stiff and heavy for being able to offer the person
25 wearing the waistcoat the wanted satisfactory protection.

While the known protecting waistcoats made of such stiff and heavy armour plates can offer the person the needed protection against attacks of the above named type, the problem of comfort
30 and the impediments to mobility have been somewhat compromised.

The object of the invention is to provide a protective waistcoat of the type mentioned in the opening paragraph, which is more comfortable for a person to wear than hitherto known.

35

Another object of the invention is to provide a protective waistcoat of the type mentioned in the opening paragraph, which allows the person wearing the waistcoat more mobility than hitherto known.

5

A third object of the invention is to provide a protective waistcoat of the type mentioned in the opening paragraph, which is able to offer a person wearing the waistcoat both protection against projectiles fired from small arms and against being
10 stabbed by a pointed object such as a knife or an awl.

The novel and unique features by means of which this is obtained consists, according to the invention, in the fact that the armour cover parts of the back section are comprising an
15 elongated central armour cover part extending along the spinal column of a person wearing the waistcoat, and at least two plate-formed side armour cover parts attached at each side of the central armour cover part in partly overlapping relationship to this and to each other.

20

This construction is built up in a similar way as the skeleton of the human body, whereby the spinal column corresponds to the elongated central armour cover part and the ribs to the side armour cover parts. The waistcoat will therefore act in the
25 same way as the skeleton by adapting to the movements of this, thereby offering a person wearing the waistcoat a high degree of comfort and mobility.

It is important that the cover parts are partly overlapping the
30 adjoining cover parts such that there, in the waistcoat put on a person, are no free openings that allow a bullet or e.g. a knife or awl to pass and hit the body of the person.

The central armour cover part could therefore have two armour
35 cover webs at each side of the central armour cover part for partly overlapping the respective plate-formed side armour

small arms. A suitable material for this purpose is KEVLAR®, which is manufactured by DuPont. KEVLAR® exists typically in relatively thin plates, which in a number of layers then are sewn together for obtaining the needed thickness.

5

Bullet-proof materials are, however, not sufficiently proof ~~against being penetrated by a pointed object like a knife or an~~ awl. Between two layers of bullet-proof materials, a second protecting material, which is proof against being penetrated by e.g. a knife or an awl, therefore could be placed. Such material could e.g. be a plate of polycarbonate.

10

In a first and very simple expedient embodiment the at least one upper plate-formed armour cover part for substantially covering the chest region of a person wearing the waistcoat comprises one upper plate-formed right hand armour cover part for substantially covering the right-hand chest region of a person wearing the waistcoat and at least one upper plate-formed left hand armour cover part for substantially covering the left-hand chest region of the person.

15

20

The right-hand - and left-hand upper armour cover parts can have a zipper or a similar device for assembling said parts in overlapping relationship to each other whereby the waistcoat is extremely easy to put on. Furthermore, the zipper ensure the maintainance of the required protective overlapping relationship. The waistcoat can be taken off in the same very easy manner.

25

To ensure that no part of the side of the person's torso is unprotected the armour cover part of the back section can comprise at least one armour cover part arranged in partly overlapping relationship to the at least one lower plate-formed armour cover part of the front section when the waistcoat is positioned on the person.

30

35

Alternatively, the armour cover parts of the back section can comprise an elongated central armour cover part extending along the spinal column of a person wearing the waistcoat, and at least two plate-formed side armour cover parts attached at each side of the central armour cover part in partly overlapping relationship to this and to each other.

This construction is built up in a similar way as the skeleton of the human body, whereby the spinal column corresponds to the elongated central armour cover part and the ribs to the side armour cover parts. The waistcoat will therefore act in the same way as the skeleton by adapting to the movements of this, thereby offering a person wearing the waistcoat a high degree of comfort and mobility.

As for the first embodiment it is important to emphasize that the cover parts always are partly overlapping the adjoining cover parts such that no openings can be found that allow a bullet or e.g. a knife or awl to pass and hit the body of the person.

The central armour cover part could therefore have two armour cover webs at each side of the central armour cover part for partly overlapping the respective plate-formed side armour cover parts, which could be connected to the central armour cover part by means of connection webs, which at each side of the central armour cover part are placed between the two armour cover webs on the same side of the central armour cover part as the respective connection webs.

The movements of the skeleton take places by means of motor muscles, which at their ends are attached to the skeleton. The armour cover plates are, according to the invention, placed such that they advantageously co-operate with the different groups of muscles by following the movement of these.

In this second expedient embodiment according to the invention, the armour cover plates are arranged such that there at each side of the central armour cover part, is placed an upper plate-formed side armour cover part for substantially covering the scapula region of a person wearing the waistcoat and a lower plate-formed side armour cover part for substantially covering the lower region of the back side of the person, and that at the front side of the person, there are placed two upper plate-formed armour cover parts for substantially covering the chest region, and at least one lower-plate formed armour cover part for substantially covering the abdominal region of the person.

The different armour cover parts are, according to the invention, connected with straps allowing the cover parts to move in relation to each other in such a way that the cover plates advantageously will follow the movements of the skeleton and the musculature of the person wearing the waistcoat.

For that purpose the straps for interconnecting the front section and the back section therefore can have a first set of straps extending over the shoulders of a person wearing the waistcoat and connecting the upper plate-formed side armour cover parts for substantially covering the scapula region of the person and the at least one upper plate-formed armour cover part for substantially covering the chest region of the person.

Furthermore, the first set of straps can be connected to the upper end of the elongated central armour cover part extending along the spinal column of a person wearing the waistcoat by means of a second set of straps, and the lower end of the central armour cover part can be connected to the at least one upper plate-formed armour cover part for substantially covering the chest region of the person by means of a third set of straps.

When at least some of the straps are made of an elastic material, the possibility and ability of the armour cover parts to move in relation to each other and to follow the movements of the skeleton and the musculature of the person wearing the waistcoat will improve.

~~Due to the design the weight of the waistcoat is distributed over the entire body of the wearer. Consequently, the waistcoat does not feel heavy to wear.~~

10

Also, due to the specific construction of the waistcoat it is very simple to adapt the waistcoat to different persons having different sizes of the torso and of the waist measurement.

15 Each armour cover part constitutes a releasable independent unit. Therefore, in the case of damage of one of the armour cover parts this can in a very simple manner be removed from the waistcoat and substituted by a new intact armour cover part. Furthermore, armour cover parts for any individual need
20 may easily be manufactured. As an example can be mentioned that the upper plate-formed armour cover part can be designed to perfectly fit a woman.

25 The invention will be explained more fully by the following description of an embodiment, which just serves as an example, with reference to the drawings, in which

Fig. 1 shows, seen from the front, a first embodiment of the waistcoat according to the invention,

30

Fig. 2 shows the same, seen from behind,

Fig. 3 is a front view of a person wearing a second embodiment of a waistcoat according to the invention,

35

Fig. 4 shows the same, seen from the side,

Fig. 5 shows the same, seen from behind,

Fig. 6 shows, on an enlarged scale, the second embodiment of
5 the waistcoat, seen from the front,

Fig. 7 shows the same, seen from behind,

Fig. 8 is an exploded view of a back section of the second
10 embodiment of the waistcoat,

Fig. 9 is a perspective view of a fragment of an elongated
central armour cover part of the back section of the second
embodiment,

15

Fig. 10 shows a fragment, seen from the side, of the lower end
of a front section of the second embodiment of the waistcoat,
and

20 Fig. 11 shows on an enlarged scale, seen in section, a detail
of the lower end of the front section of the second embodiment
of the waistcoat.

25 In fig. 1 is, seen from the front, a first embodiment of a
waistcoat according to the invention. In fig. 2 this embodiment
is shown from behind. The waistcoat 2 consists of a front
section 3 and a back section 4. The two sections 3 and 4 are
arranged to partly overlapping each other along the side of the
person wearing the waistcoat thereby carefully protecting also
30 this part of the person. Shoulder straps 5a, 5b, extending over
the shoulders of the person, are connecting the two sections 3
and 4.

35 The very simple embodiment of the waistcoat shown in figs. 1
and 2 is a four-unit waistcoat in which section 4 is one single
armour cover part 8 and section 3 is built up of three armour

cover parts 16a,16b,18 in partly overlapping relationship. The upper plate-formed armour cover parts 16a,16b is detachably assembled in partly overlapping relationships to each other by means 19 which in the shown case is a zipper 19.

5

Two straps 14a,b are attached to the top of the armour cover part 8 of the back section 3 for connecting said armour cover part 8 to the upper plate-formed armour cover parts 16a,16b of the front section 3 via the shoulder straps 5a,b extending over the shoulders of the person wearing the waistcoat. Buckles 15a,b serve for making the connections adjustable.

15

The two sections 3 and 4 are brought into correct position in relation to the body of the person and to each other by adjusting the shoulder straps 5a,b in relation to the upper cover parts 16a,b. This adjusting can be done easily and quickly because the upper cover parts 16a,b and the shoulder straps 5a,b are supplied with mating strips of VELCRO® 24a,b.

20

The lower cover part 18 is connected to the shoulder straps 5a,b by means of straps 20a,b made of an elastically material.

25

Furthermore, there can be provided one or more straps, for connecting either the lower end of the lower plate-formed armour cover part 18 of front section 3 and/or the lower end of the armour cover part 8 to the belt straps of the trousers (not shown) of the person wearing the waistcoat.

30

One pair of straps 25a,b, attached to each side of the lower end of the armour cover part 8 of the back section 4, are pulled through a loop 27 on the lower plate-formed armour cover parts 18 of the front section 3 and the two pair of straps 25a,b are adjustable tightened in relation to each other by means of a buckle 28.

35

The lower end of the plate-formed armour cover part 8 of the back section 4 and the lower end of the plate-formed armour cover part 18 of the front region 3 are thereby partly folded over the side regions of the body of the person wearing the waistcoat in partly overlapping relationships to each other while in the same time said parts appropriately are gathered around the body.

Two other straps 29a,b are attached to each side of the lower end of the plate-formed armour cover part 8 of the back section 4 for connecting the upper plate-formed armour cover parts 16a,16b of the front section 3 to armour cover part 8. The straps 29a,b are fixed to buckles 23a,b on the upper plate-formed cover parts 16a,16b, said buckles being attached to said cover parts 16a,16b by means of straps 22a,b.

During tightening and adjusting of the straps 29a,b the lower cover part 8 of the back section 4 and the lower plate-formed cover part 18 of the front section 3 are appropriately held gather around the body of the person. The adjustment of the fitting of the waistcoat to the person is described in further detail in relation to the second embodiment.

However, by a very simple individually adjusting of the strap system of the waistcoat, it can be adjusted to perfectly fit the torso of a person and because the straps are made of an elastically material the movement of the person will not affect the correct protective placement of the cover parts of the waistcoat.

This first expedient embodiment is preferably made as an lightweight waistcoat in which one or more of the armour cover parts are made up of several layers of a first protective material e.g. KEVLAR® and at least one layer of a second protective material such as polycarbonate. Other combinations and numbers of material are foreseen within the scope of the

invention. This lightweight embodiment are very comfortable to wear and are often the preferred choice of persons such as e.g. doormen at discothèques and bodyguards who at the same time need to wear e.g. a jacket outside the waistcoat in order to have a presentable appearance.

The armour cover parts are manufactured in the same manner as described for the second embodiment mentioned below. A detailed description of the different body areas protected by the different cover parts follows in relation to the second embodiment.

Each armour cover part has an outside fabric lining in form of an enclosure. In the embodiment shown in figs. 1 and 2 the enclosures are as an example made with openings 37,38 through which a protecting material can be entered and withdrawn.

In figs. 3 - 5 is seen a person 1 wearing a second embodiment of a waistcoat 2 according to the invention. This embodiment of the waistcoat provide very high protection to a person against being wounded by low calibre projectiles fired from small arms such as revolvers and small machine guns and/or being stabbed by a pointed object such as a knife or an awl.

The waistcoat according to the second embodiment of the invention consists of a front section 3, as seen in fig. 3, and a back section 4, as seen in fig. 3. Fig. 4 shows that the two sections 3 and 4 are partly overlapping each other along the side of the person thereby carefully protecting also this part of the person. Shoulder straps 5a,5b, extending over the shoulders of the person, are connecting the two sections 3 and 4.

Figs. 6 and 7 show, on an enlarged scale, solely the waistcoat 2, which in fig. 6 is seen from the front and in fig. 7 from behind. The two sections 3 and 4 are built up of several armour

cover parts, the construction of which will be more fully explained later on.

5 The cover parts of the back section 4 consist of an elongated central cover part 6 extending along the spinal column of the person 1, two upper plate-formed side cover parts 7a,b and two lower plate-formed side cover parts 8a,b.

10 The back section of the waistcoat is in fig. 8 seen in an exploded view, and the central cover part 6 is, in perspective, shown in fig. 9.

15 As best seen in fig. 9, the central cover part 6 has at each side of a central axis 9 two armour cover webs 10 and two connection webs 11 which are placed between two of said armour cover webs 10.

20 Each of the upper plate-formed side cover parts 7a,b are assembled with one of the connection webs 11 by means of a zipper 12, and each of the lower plate formed side cover parts 8a,b are assembled with another one of the connection webs by means of a zipper 13.

25 When attached to the connection webs 11, the armour cover webs 10 are partly overlapping the cover parts 7a,b and 8a,b, and these are again partly overlapping each other.

30 Two straps 14a,b are attached to the top of the two upper side cover parts 7a,b for connecting said parts to the front section via the shoulder straps 5a,b extending over the shoulders of the person wearing the waistcoat. Buckles 15a,b serve for making the connections adjustable.

35 The cover parts of the front section 5 consist of two upper plate-formed cover parts 16a,b and a first 17 and second 18 lower plate-formed cover part. The upper cover parts 16a,b is

in this case detachably assembled by means of a zipper 19 in partly overlapping relationships to each other.

5 The first lower cover part 17 is connected to the upper plate-formed cover parts 16a,b in partly overlapping relationships to this by means of straps 20a,b attached to the upper end of the upper cover parts 16a,b. The straps are preferably made of an elastically material such as neoprene.

10 The second lower cover part 18 is connected to the upper plate-formed cover parts 16a,b in partly overlapping relationships to the first lower cover part 17 by means of straps 21a,b attached to the lower end of the upper cover parts 16a,b. The straps 21a,b are preferably made of an elastically material such as neoprene.

20 Furthermore, there can be provided one or more straps, for connecting either the lower end of the first lower plate formed cover part 17 of front section 3 or the lower end of the second lower plate formed cover part 18 of front section 3 to the belt straps of the trousers (not shown) of the person wearing the waistcoat. Optionally a corresponding arrangement can be made in relation to the back section 4.

25 Straps 22a,b having buckles 23a,b attached to the lower end of the upper cover parts 16a,b serve to connect these to the belt straps of the trousers (not shown) of the person wearing the waistcoat.

30 When putting on the waistcoat, the shoulder straps 5a,b, which connect the front and back sections 3 and 4 of the waistcoat 2, are laid over the shoulders of the person who is to wear the waistcoat, such that the front section is hanging down the front of the person and the back section is hanging down the back of the person.

The two sections 3 and 4 are brought into correct position in relation to the body of the person and to each other by adjusting the shoulder straps 5a,b in relation to the upper cover parts 16a,b. This adjusting can be done easily and quickly because the upper cover parts 16a,b and the shoulder straps 5a,b are supplied with mating strips of VELCRO® 24a,b.

Then the two sections 3 and 4 are tightened in relation to the body of the person and in relation to each other by means of several straps.

Two pair of straps 25a,b, attached to each side of the lower end of the central cover part 6 of the back section 4, are pulled through loops 26a,b on the lower plate-formed side cover parts 8a,b of the back section 4 and through another loop 27 on the second lower plate-formed cover part 18 of the front region 3.

Then the two pair of straps 25a,b are tightened in relation to each other by means of buckles 28 on one of the two pair of straps 25a,b. The lower plate-formed side cover part 8a,b of the back section 4 and the second lower plate-formed cover part 18 of the front region 3 are thereby partly folded over the side regions of the body of the person 1 in partly overlapping relationships to each other while in the same time said parts appropriately are gathered about the body.

Further, two other straps 29a,b, attached to each side of the lower end of the central cover part 6 of the back section 4, are pulled through loops 30a,b on the lower plate-formed side cover parts 8a,b of the back section 4 and fastened to the lower end of the upper plate-formed cover part 16a,b of the front section 3, thereby appropriately gathering the lower plate formed side cover parts 8a,b, the first lower plate-formed cover part 17 of the front region 3 and the upper plate-

formed cover parts 16a,b of the front section 3 about the body of the person.

At the same time the first cover part 17 is brought into partly overlapping relationships to the lower plate-formed side cover parts 8a,b of the back section 4 and into the upper plate-formed cover parts 16.b of the front section 3. The first cover part 17 has also been partly folded around the side region of the body of the person.

10

Two straps 31a,b attached to each side of the upper end of the elongated central cover part 6 of the back section 4 are moreover pulled through the buckles 15a,b on the straps 14a,b on top of the upper side cover parts 7a,b for centralising the back section correctly in relation to the body of the person.

15

This operation can be done easily and quickly because the straps 31a,b are supplied with strips 32a,b of VELCRO®.

Also the upper cover parts 16a,b of the front section 2 of the waistcoat are attached to the belt straps of the person's trousers (not shown) by means of the straps 22a,b with the buckles 23a,b.

Now the waistcoat is carefully secured to the body of the person and in such a way that the armour cover parts are partly overlapping the adjoining cover parts, thereby leaving no opening free for allowing a bullet or a knife or awl to find its way to the body of the person.

30

This advantageous construction is illustrated in fig. 10 showing a fragment, seen in section, of the lower end of the front section 2. The upper plate-formed cover part 16a,b of the front section 2 is, as can be seen, connected to the second lower plate-formed cover part 18 of the front region 2 with the straps 21a,b leaving an opening 33 free between said parts.

35

Said opening is, however, covered by the first lower plate-formed cover part 17.

Fig. 11 shows, on an enlarged scale and seen in section, a detail of the two lower cover parts 17 and 18 illustrating how the armour cover parts more precisely are constructed.

Each armour cover part consists of a fabric lining in form of an enclosure 34. In the enclosure is placed a first protecting material 35, which is proof against being penetrated by e.g. low calibre projectiles fired from e.g. small arms.

The first protecting material could be KEVLAR®, a material that is manufactured of Du Pont in relatively thin sheets, which are sewn together for obtaining the necessary thickness.

Many bullet-proof materials are, however, not sufficiently proof against being penetrated by a pointed object such as a knife or an awl. To overcome this problem there is between two layers of the first protecting material 35 in each enclosure placed a second protecting material 36 which is proof against being penetrated by e.g. a knife or an awl. The second protecting material 36 could typically be a plate of a hard plastic such as polycarbonate.

As it appears from the explanation above, the armour cover parts each correspond to a specific region of the body of the person wearing the waistcoat. Moreover, the straps connecting the armour cover parts are to a great extent arranged along the motor muscles and also have such an elasticity that each armour cover part follows the movement of the corresponding region of the body.

The waistcoat according to the invention therefore obtains the same pattern of movement as the body of the person wearing the waistcoat, thereby offering the person much more freedom of

movement and much more comfort than what is possible when using a protective waistcoat of conventional type.

5 More specifically, the upper armour cover parts 16a,b of the front section 2 covering the chest sit tightly to follow the body movement, while the lower armour cover parts 17 and 18 of the front section 2 slide over each other like tiles for no impediments to body movement or downward rotation of body.

10 The lowermost armour cover part 18 is fastened to the belt straps on the person's trousers (not shown) ensuring that it remains in position when moving away from a potential attacker forcing the person backwards.

15 The upper plate-formed side cover parts 7a,b of the back section 3 are constructed to slide, stretch from the connections and fall back into place depending on how the body moves, and the lower plate-formed cover parts 8a,b overlaps the abdominal region.

20 The waistcoat according to the invention provides the wearer with a great mobility. The waistcoat enables the wearer to sit, to get in and out of e.g. a car, without the protective parts of the waistcoat being moved out of the protective position.

25 The waistcoat fits tightly over the human body and will due to its structure always adapt to the different movements of the person. E.g. a person raising his arms to a shooting position will still be protected as the cover plates during the movement of the arms slide above each other. The known rigid protective

30 waistcoats will be raised together with the arms thereby providing an unpractical shooting position and in addition to this leave a part of the human body free.

The embodiment described above and shown in the figures is only

35 to be understood as an example of the invention. Within the scope of the invention there could therefore be many other

embodiments. As an example can be mentioned that the waistcoat can be made with the front according to the invention and a traditional back.

- 5 The front section of the waistcoat could, by way of example, thus be formed like the back section with an elongated central cover part and plate-formed side cover parts attached to the central cover part.
-

- 10 Furthermore, each of the cover parts can be removed and washed individually if they were to get soiled by e.g. blood.

- The foregoing description of the present invention has been presented for the purpose of illustration and description.
- 15 Furthermore, the description is not intended to limit the invention to the form disclosed herein. Consequently, variations and modifications commensurate with the above teaching and the skill or knowledge of the relevant art are within the scope of the invention. The embodiments described
- 20 herein are further intended to explain best modes known for practising the invention. It is intended that the appended claims be construed to include alternative embodiments to the extent by the prior art.

Claims

1. A protective waistcoat comprising:
- a front section (3) on the front side of a person (1) wearing the waistcoat (2) and a back section (4) on the back side of said person,
~~straps (5a,b;14a,b;20a,b;21a,b;25a,b;29a,b;31a,b) for connecting the two sections (2;3), and~~
 - a number of armour cover parts (6;7a,b;8;8a,b;16a,b;17;18) forming the sections, characterised in that the armour cover parts (16a,b;17;18) of the front section (3) comprises:
 - at least one upper plate-formed armour cover part (16a,b) for substantially covering the chest region of a person wearing the waistcoat,
 - at least one lower plate-formed armour cover part (17;18) for substantially covering the abdominal region of the person, and
 - that at least some of said armour cover parts are arranged in partly overlapping relationship to each other.
2. A protective waistcoat according to claim 1, characterised in, that the at least one upper plate-formed armour cover part (16a,b) for substantially covering the chest region of a person wearing the waistcoat comprises, one upper plate-formed right hand armour cover part (16a) for substantially covering the right-hand chest region of a person wearing the waistcoat (2), and at least one upper plate-formed left hand armour cover part (16b) for substantially covering the left-hand chest region of the person.
3. A protective waistcoat according to claim 1 or 2, characterised in, that the right hand - and left hand upper armour cover parts (16a,b) has a zipper or a similar

device for assembling said parts in overlapping relationship to each other.

4. A protective waistcoat according to claim 1, 2 or 3,
5 characterised in that the armour cover parts
(6;7a,b;8;8a,b) of the back section (4) comprises at least
~~one armour cover part (7a,b;8a,b) arranged in partly~~
overlapping relationship to the at least one lower plate-
formed armour cover part (17;18) of the front section (3)
10 when the waistcoat is positioned on a person.
5. A protective waistcoat according to each of the claims 1 -
4, characterised in that the armour cover parts
(6;7a,b;8a,b) of the back section (4) are comprising:
15 - an elongated central armour cover part (6) extending along
the spinal column of a person wearing the waistcoat (2),
and
- at least two plate-formed side armour cover parts
(7a,b;8a,b) attached on each side of the central armour
20 cover part (6) in partly overlapping relationship to this
and to each other.
6. A protective waistcoat according to each of the claims 1 -
5, characterised in that the central armour cover part (6)
25 comprises:
- at least two webs (10) extending in opposite directions
and connecting the at least two plate-formed side armour
cover parts (7a,b;8a,b) on each side of the central armour
cover part (6), and
30 - at least two armour cover webs (11) extending in opposite
directions and partly overlapping the at least two plate-
formed side armour cover parts (7a,b;8a,b) connected to
the respective connection web (10).

7. A protective waistcoat according to each of the claims 1 - 6, characterised in that the central armour cover part (6) comprises:
- two armour cover webs (10) on each side of the central armour cover part (6), and
 - two connection webs (11) on each side of the central armour cover part (6) arranged between the two armour cover webs placed on the same side of the central armour cover part (6) as the respective connection webs (11).
8. protective waistcoat according to each of the claims 1 - 7, characterised in that there on each side of the central armour cover part (6) is arranged an upper plate-formed side armour cover part (7a,b) for substantially covering the scapula region of a person wearing the waistcoat (2) and a lower plate-formed side-armour cover part (8a,b) for substantially covering the lower region of the back of the person.
9. A protective waistcoat according to each of the claims 1 - 8, characterised in that each armour cover part (6;7a,b;8a,b;16a,b;17;18) is comprising:
- a fabric lining forming an enclosure (34), and
 - a first protecting material (35), which is held in said enclosure (34) and is proof against being penetrated by e.g. low calibre projectiles fired from e.g. small arms.
10. A protective waistcoat according to claim 9, characterised in that the first protecting material (35) in each enclosure (34) consists of a number of layers sewn together.
11. A protective waistcoat according to claim 10, characterised in that there between two layers of the first protecting material (35) in each enclosure is placed

at least one second protecting material (36) which is proof against being penetrated by e.g. a knife or an awl.

12. A protective waistcoat according to each of the claims 1 -
5 11, characterised in that the straps (5a,b;14a,b;20a,b;
21a,b;25a,b;29a,b;31a,b) for connecting the front section
(3) and the back section (4) of the waistcoat (2) are
comprising a first set of straps (5a,b) extending over the
10 shoulders of a person wearing the waistcoat and connecting
the upper plate-formed side armour cover parts (7a,b) for
substantially covering the scapula region of the person
with the at least one upper plate-formed armour cover part
(16a,b) for substantially covering the chest region of the
person.
13. A protective waistcoat according to claim 12,
characterised in that,
- the first set of straps (5a,b) is connected to the upper
end of the elongated central armour cover part (6)
20 extending along the spinal column of a person wearing the
waistcoat (2) by means of a second set of straps (31a,b),
and
- the lower end of the central armour cover part (6) is
connected with the at least one upper plate-formed armour
cover part (16a,b) for substantially covering the chest
25 region of the person by means of a third set of straps
(29a,b).
14. A protective waistcoat according to claim 13,
30 characterised in, that at least some of the straps are
made of an elastic material.

Protective Waistcoat**ABSTRACT**

5

A protective waistcoat is comprising a front section (3) on the front side of a person (1) wearing the waistcoat (2) and a back section (4) on the back side of said person, straps (5a,b;14a,b;20a,b;21a,b;25a,b;29a,b;31a,b) for connecting the two sections (2;3), and a number of armour cover parts (6;7a,b;8a,b;16a,b;17;18) forming the sections. The armour cover parts (16a,b;17;18) of the front section (3) furthermore comprises at least one upper plate-formed armour cover part (16a,b) for substantially covering the chest region of a person wearing the waistcoat and at least one lower plate-formed armour cover part (17;18) for substantially covering the abdominal region of the person, and said armour cover parts are arranged in partly overlapping-relationship to each other. The waistcoat according to the invention thereby is offering the person much more freedom of movement and much more comfort than possible when using a protective waistcoat of conventional type.

25 Fig. 4

Beskyttelsesvest**SAMMENDRAG**

- 5 En beskyttelsesvest omfatter en frontsektion (3) på forsiden af den person (1), der bærer vesten (2), og en rygsektion (4) på ryggen af nævnte person, rumme (5a,b;14a,b;21a,b;25a,b; 29a,b;31a,b) til at forbinde sektionerne (2;3), og et antal panserdækdele (6;7a,b;8a,b;16a,b;17;18), der danner sektionerne.
- 10 Frontsektionens (3) panserdækdele (16a,b;17;18) omfatter mindst én øvre pladeformet panserdækdel (16a,b) til i hovedsagen at dække brystregionen på en person der bærer en vest og mindst én nedre pladeformet panserdækdel (17;18) til i hovedsagen at dække personens abdominalregion og nævnte
- 15 panserdækplader er arrangeret i delvis overlappende relation til hinanden. Vesten ifølge opfindelsen yder dermed personen meget mere bevægelsesfrihed og meget bedre komfort end en konventionel beskyttelsesvest.

20 Fig. 4

01 MAJ 2000

Modtaget

1/8

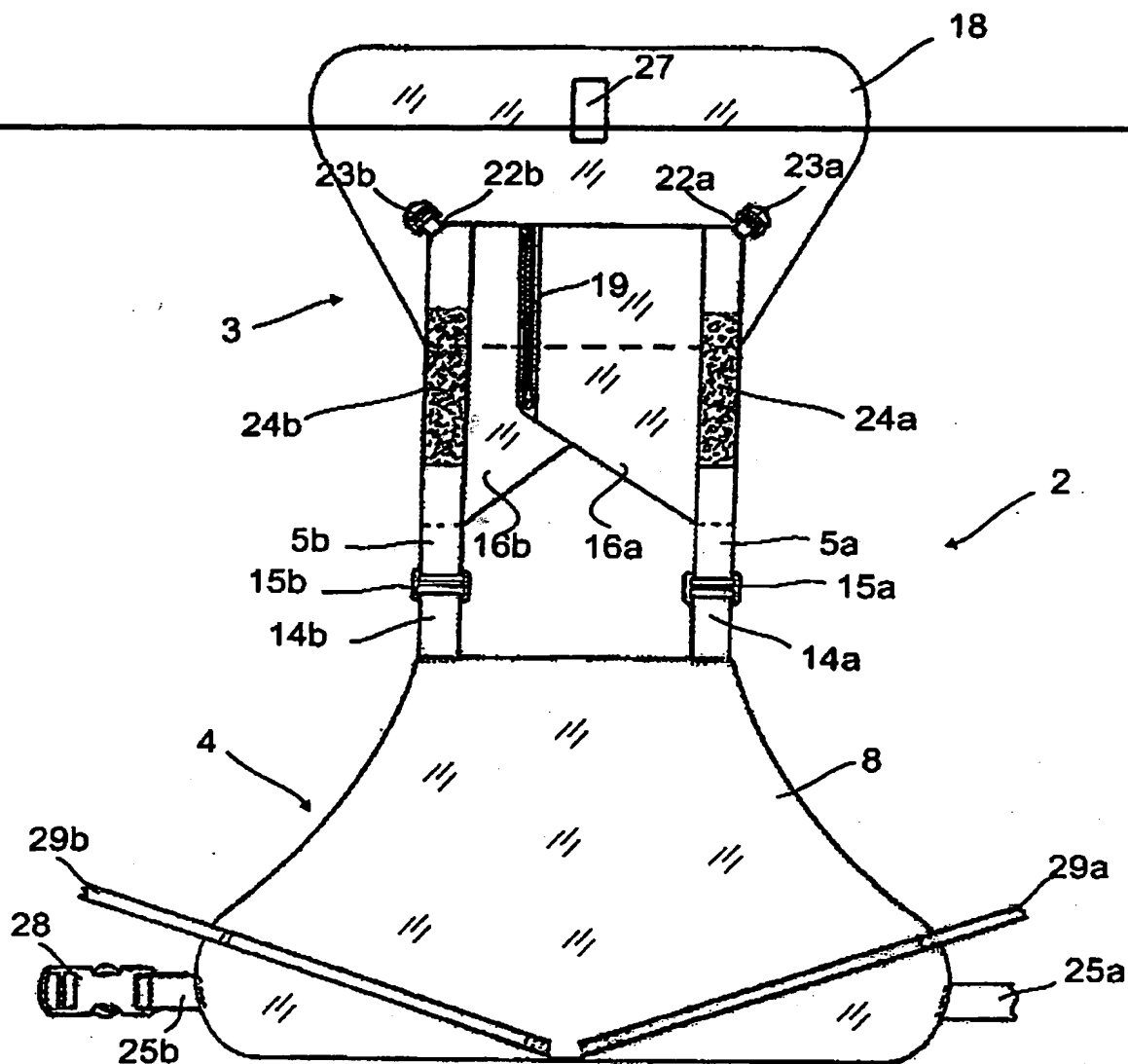


Fig. 1

Modtaget

2/8

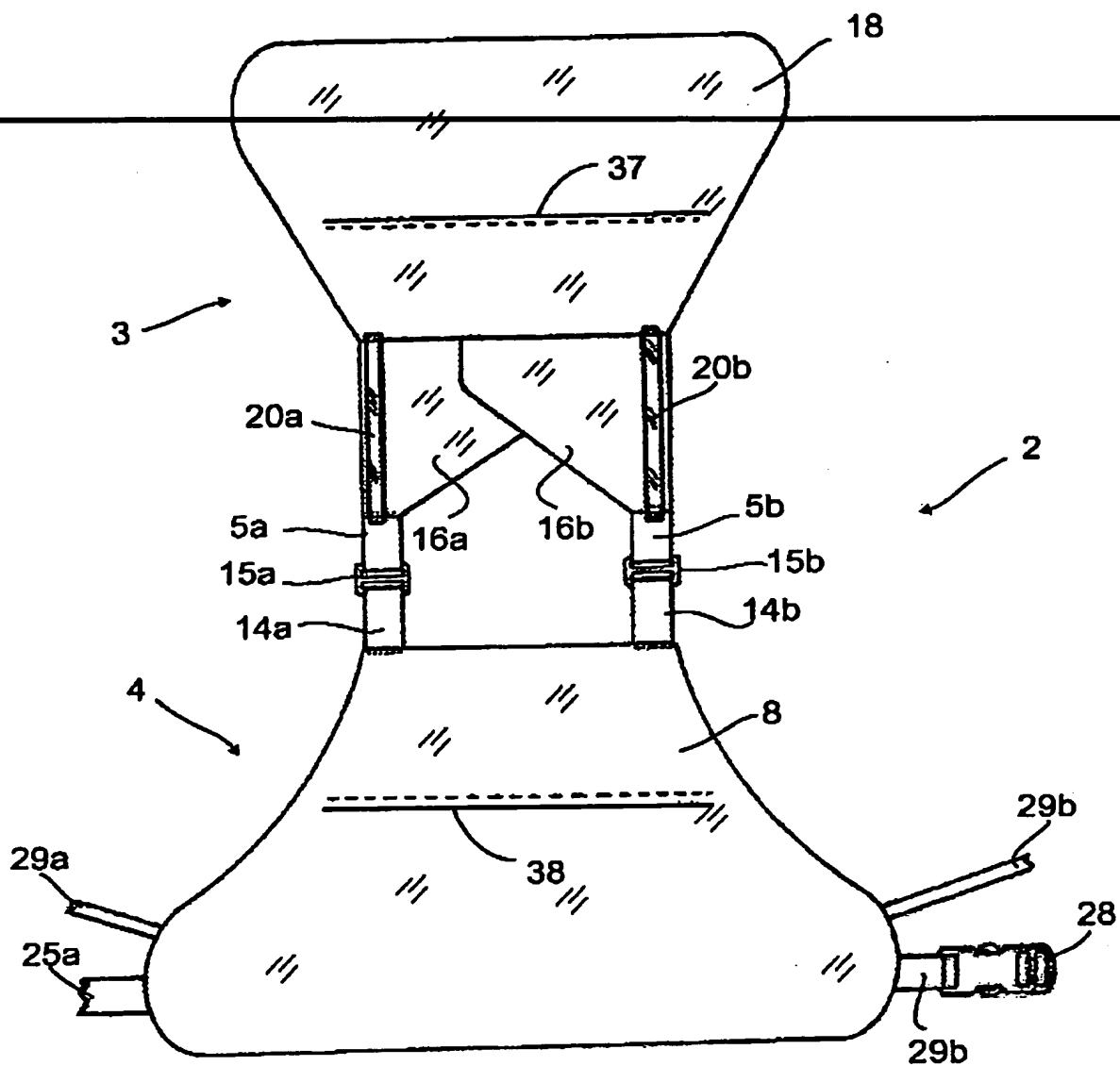


Fig. 2

Modtaget

3/8

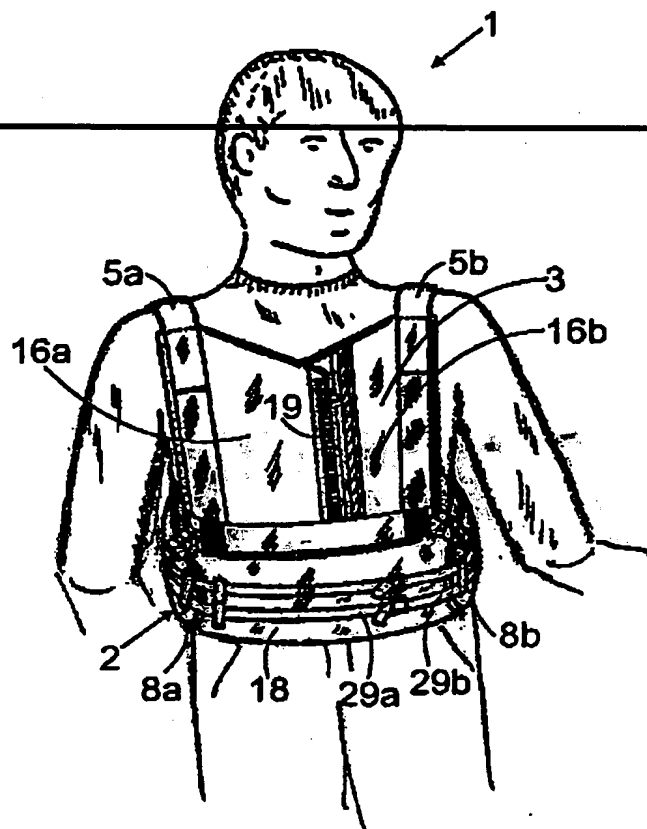


FIG 3

01 MAJ 2000

Modtaget

4/8

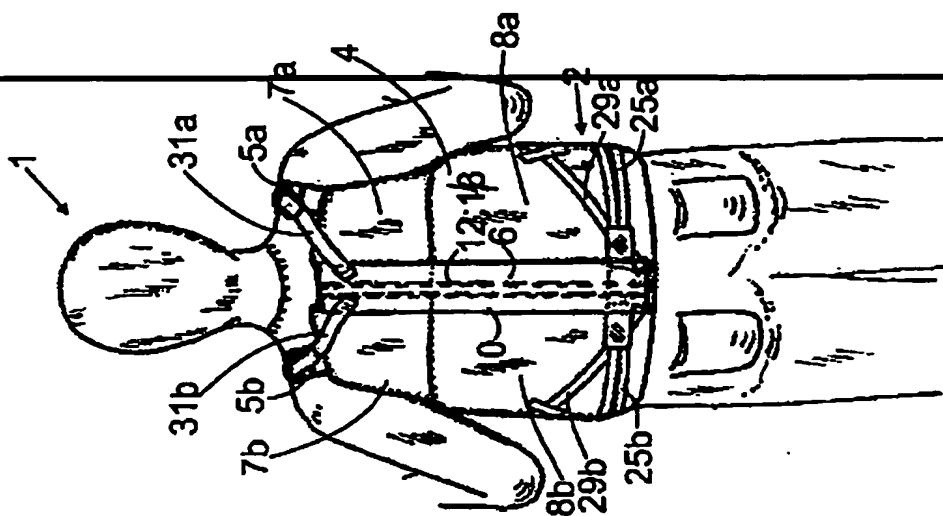


FIG. 5

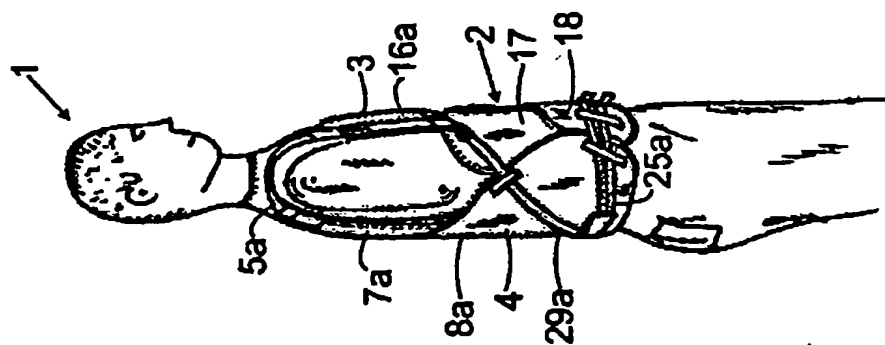


FIG. 4

01 MAJ 2000

Modtaget

5/8

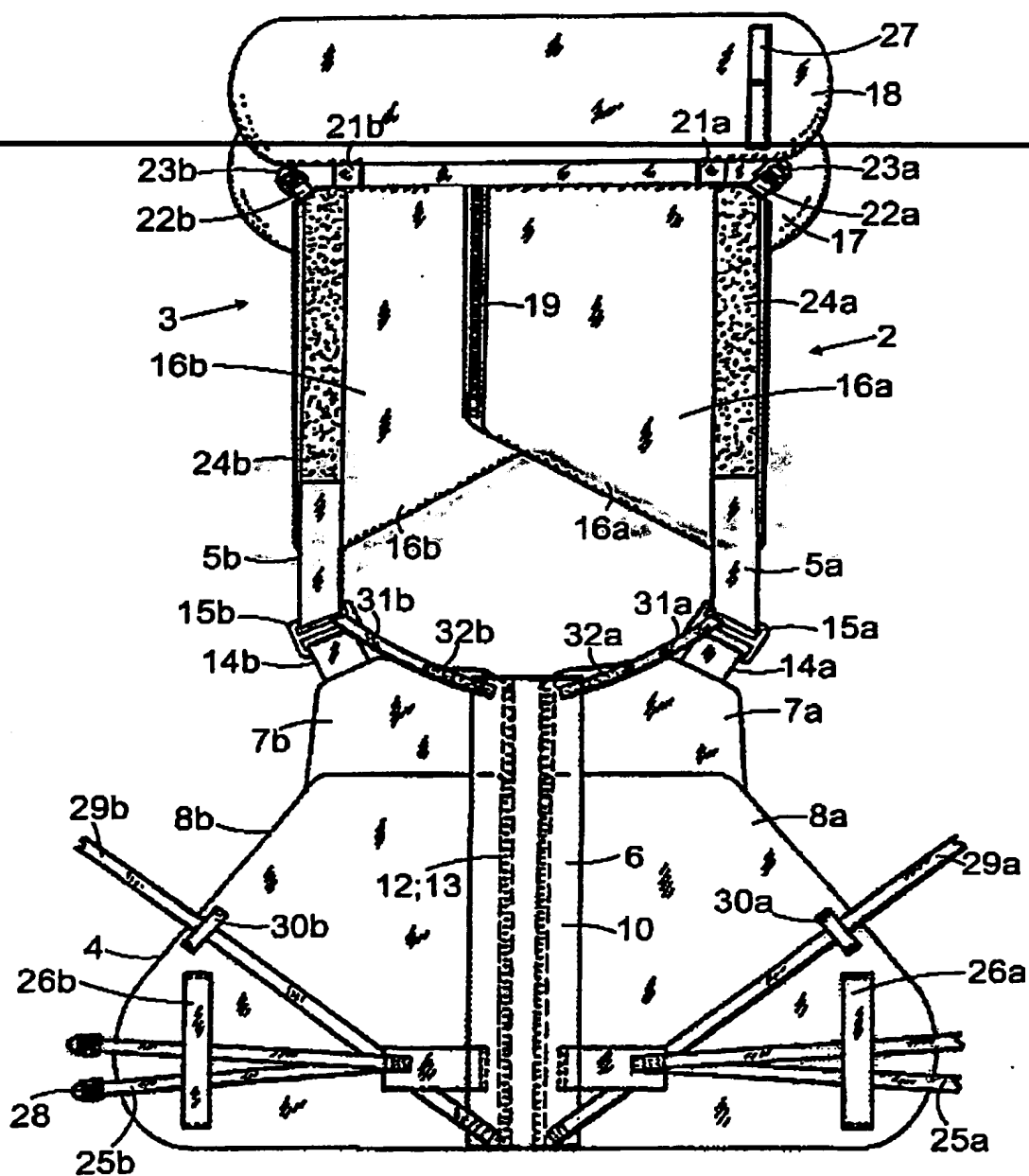


FIG. 6

01 MAJ 2000

Modtaget

6/8

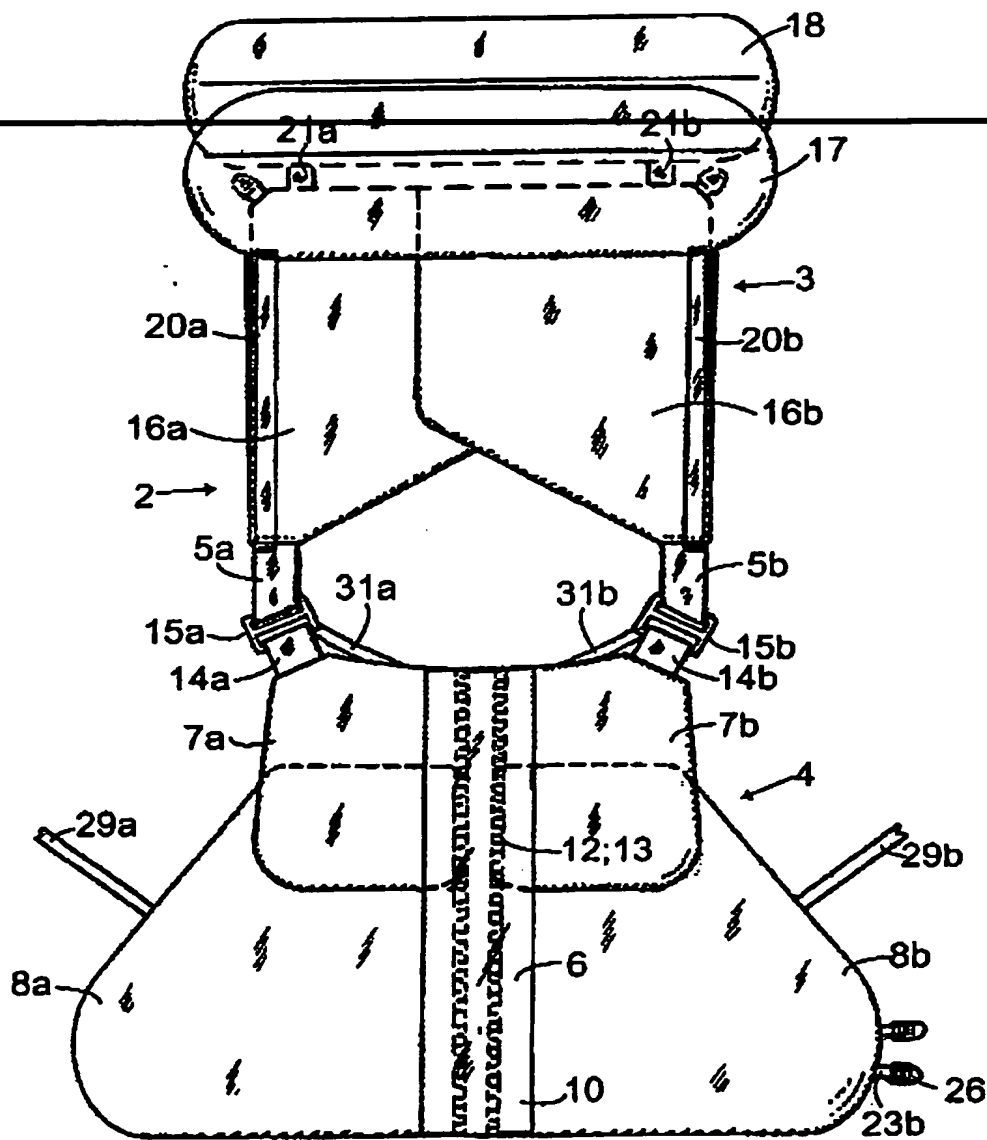


FIG 7

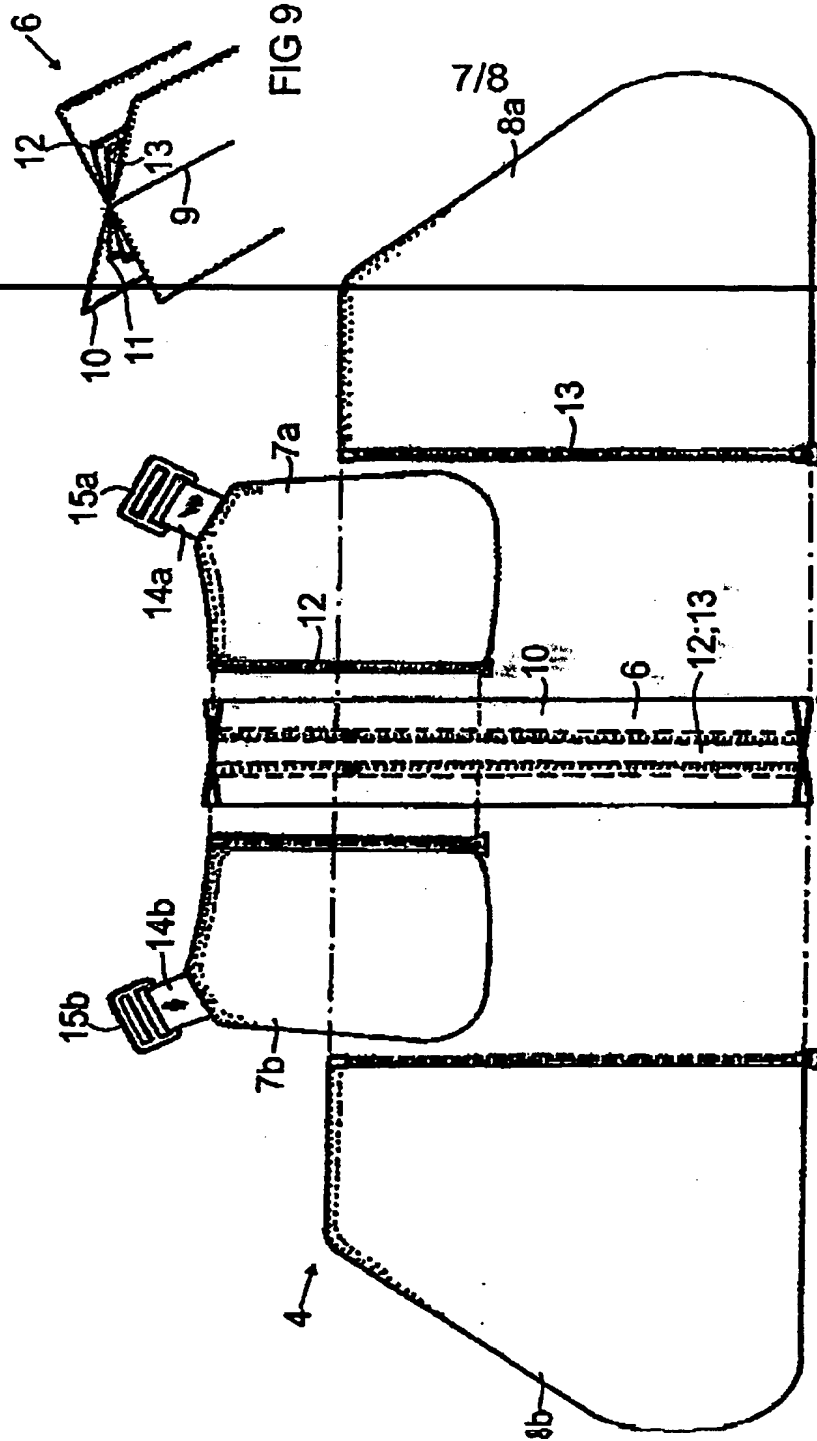


FIG 8

FIG 9

01 MAJ 2000

Modtaget

8/8

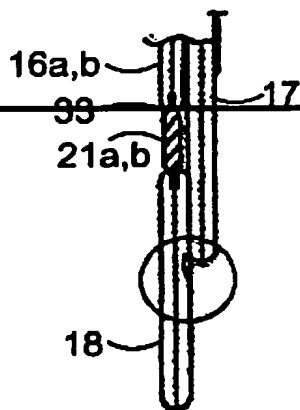


FIG. 10

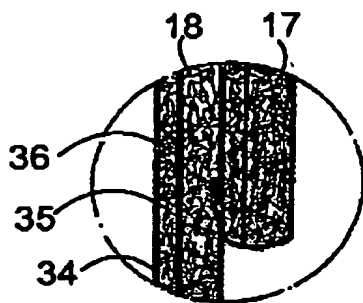


FIG. 11

THIS PAGE BLANK (USPTO)